now have a railroad fiscal year corresponding with that of the federal government, and the increased number (22) that now use the statistical blanks prepared for them by the inter-state commerce commission. The conferences have also stimulated the States in the tendency to copy the provisions of the federal law in their own statutes. In the opinion of Dr. Clark, the way to make State Railway Commissions effective is to encourage this tendency towards uniformity and towards coöperation on the part of the various commissions. He also believes in general in good salaries and long terms for the individual commissioners, and suggests a method of insuring a higher standard of individual efficiency by statutory provisions, prescribing certain essential qualifications for holding the office, and the insertion in the oath of office of a statement that such provisions have been complied with.

Much of the first fifty pages of monograph seems to have been put in for the sake of symmetry, and as it recounts matters that have been dwelt upon by previous writers it could have been abbreviated to advantage. In the only State with whose railroad legislation the present reviewer is thoroughly familiar, Dr. Clark makes a definite mistake in describing the constitution of the commission. He says that three State officials appoint three secretaries and the latter constitute the commission. As a matter of fact five State officials constitute the Board of Transportation, and this *ex-officio* board then chooses three salaried secretaries who do the routine work but have no authority.

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SIXTH ANNUAL REPORT OF THE COMMISSIONER OF LALOR. 1890. Cost of Production: Iron, Steel, Coal, etc. Pp. x and 1404. Washington: Government Printing Office, 1891.

This portly volume, of tables almost exclusively, is a veritable storehouse of information, authentic and detailed-

Authentic, because taken by reliable agents directly from the sources of information—the books of manufacturing establishments and the household accounts of families. Of details there is a great abundance.

Statistics are given in Part I for 618 establishments which manufacture iron and steel or produce the material used in the manufacture of them. The facts given relate to the amount produced within a defined period, to the appliances of production, the quantity, quality and cost of materials, the cost of labor, and more beside. Each fact is given separately for every establishment. "It is our opinion," says the Report (p. 7), ". . . that the number and distribution of establishments is adequate to establish the representative character of the Report." "A statement of the names of such concerns would alone emphasize" (p. 5) its truthfulness. Further, the pay rolls of ninety-nine establishments have been copied, and each one is reproduced in the tables in Part II. These pay rolls are "without doubt" representative "of all the existent conditions as to wages and duration of employment." "No necessity seemed to exist for collecting these details from all the 618 establishments," (p. 287). Finally, in Part III, we have the identical budgets for one year of 3,260 families. We know the size of each family; the age, sex and condition of each member; the location (by states); the nationality and employment of its head; its income, its total expense; its expense for several important items of food, for rent, for clothing, and so forth. "The department has aimed to secure accounts from a representative number of the establishments covered in Parts I and II, and also from those families whose surroundings and conditions made them representative of the whole body of employes in any particular establishment," (p. 610).

Some matters, however, upon which information is often wanted, are not comprised in the tables. We learn, for instance, nothing of the location of the plant or family by towns or counties; we do not learn whether they are

within or near a city, near or far from a large market. Doubtless these facts could not have been given without divulging the identity of many of the establishments described. Nevertheless, data of this kind usually form a prominent feature of statistical reports on the cost of production, of labor (wages), and of living; and a relation has been established between cost and the geographical position of plant or family. We might thus suspect with good reason that the neglect of this factor would impair the results of the investigation. But the limitation on the usefulness of the tables in this direction is offset by an extension in another and a new direction. The tables disclose a variation in the items cited which is independent of geographical location, which appears whenever factory and factory, family and family, even of the same district, are compared.

If we look at the census reports, in which geographical location is indicated as fully, probably, as in any reports we find that the exact location is seldom given in connection with cost of production and associated items if, within the unit of classification, be it city, county or State, the number of works is so small that the facts for individual works would be disclosed. In not unfrequent instances the geographical unit of classification is abandoned towards the end of a table "in order that the business of individual establishments may not be disclosed to the public." (Census Bulletins, Nos. 78, 97, 1891.) In general, and especially in the centres of production, where many works are collected within a small area, the accessible tables only give the average cost of materials, labor, living, etc. They, too, neglect something. They neglect variations for individual cases. It is doubtless true that the range of variations will be less in a small than in a large area; much less for some items even than for others. But that there is an appreciable variation within even small areas Commissioner Wright's statistics authorize us to conclude. If we cannot have local and individual variations exhibited together, in one set of tables,

as yet, let us congratulate ourselves that we have them exhibited at all.

The worth of the statistics must be judged first, and very largely, by the representative character of the establishments and families for which such full data are given in the primary tables; and, secondly, to some degree, by the character of the secondary tables, which are recapitulations, summaries and averages derived from the former. In general, the number of the secondary tables had to be very limited; so the fact of exclusion cannot be held to work prejudice to those combinations of facts whose omission is noticed.

In twenty-six establishments in the northern district of the United States the cost of producing "run of furnace" pig iron is $13.938 per long ton; in twenty-four mills in the southern district of the United States, $10.755. The cost of Bessemer pig iron in twenty-four establishments in the northern district of the United States is $15.366 per long ton; in four mills in Great Britain, $10.326; in three in continental Europe, $11.739. (Pp. 71, 74, 75). The averages for the United States are made up from seventy-four establishments, including ninety-one furnaces. Altogether there are ninety-eight plants, with 117 furnaces, representing the United States in the tables. From the Annual Statistical Report of the American Iron and Steel Association (presented May, 1890) we learn that there were 332 pig iron furnaces in blast at the close of 1888 and 344 at the close of 1889. Current Census Bulletin No. 9 adds that 338 were in blast at the close of the census year; and that 562 were active or "likely some day to be active." Thus the Report includes about 34 per cent. of the number of furnaces active, and 21 per cent. of those now in existence. Further, 70 per cent. of the furnaces reported on are in the northern and 30 per cent. in the southern district; whereas, of the product for the census year 1890, 81 per cent. was made in the North and 19 per cent. in the South. Can these parts be accepted as representative of the respective wholes? It would manifestly be difficult to specify what percentages of number and distribution would first constitute

gross unreliability. But I do not think the facts as shown in this instance furnish basis for criticism of Commissioner Wright's judgment that the establishments reported represent the whole American industry fairly. But the American averages and percentages must be compared with the foreign cautiously.

The average cost per ton of producing 208,824 tons of muck bar iron* in twenty-six establishments in the United States was $26.843. In Europe the average cost per ton of producing 52,642 tons in five concerns was $17.073; in Great Britain, for a total product of 30,080 tons in four concerns, the average cost was $16.145. (Pp. 118–119.) But the cost of production per ton in the twenty-six establishments in the United States ranged (pp. 114–115) from $23.914 in a large mill working nearly full time to $32.083 in a small mill working a little over half-time (a range of $8.17). The cost of production in Europe, averaging for the data given $9.77 less, actually ranges in the five mills from $19.55 to $16.008 per ton. In comparison with Great Britain the excess of cost of production in the United States is, for the average, $10.698; but the four British works produce at costs varying from $17.442 to $14.301 per ton. The point of the criticism here intended is directed toward those remarks and secondary tables (pp. 118–119) which suggest a comparison between the average cost of production in different countries. The average cost is not a safe criterion of the maximum cost at which it is economically possible to produce. Yet it is the maximum cost of economic production which has a recognizable relation to the competitive selling price and which, to the extent it exhibits that relation, is the criterion of the competitive power of different countries in a given market. These maxima for the production of muck bar iron can be ascertained in Table II. A–H, pp. 110–117.

The twenty-six muck bar iron establishments are it is claimed fairly representative of the whole muck bar iron

*Muck bar iron is in the form of elongated slabs from four to eighteen inches wide, and half an inch to two inches thick. It is puddled iron which, after being forged, has been passed through a set of rollers once. Enc. Brit., Art. Iron.

industry in the United States. No late reliable estimates of the number and distribution of the establishments in this industry are at hand. But representative as touching what conditions? Doubtless as regards suitableness of location, financial success and economy in production—one or all together. But again, were those establishments selected which enjoyed conditions apparently about the average, or were those also selected, purposely, which, according to outward appearance, exhibited the extremes of favorableness and unfavorableness? In the latter case the range of the cost of production of one ton of product in the muck bar iron mills of the United States would remain approximately $8.169, *i. e.*, from $23.914 to $32.083. In the former the range must be a great deal more. However, if we arrange the twenty-six mills in the order of the cost of production, beginning with the highest, and if we omit the first one and the last two, we find among the rest no consecutive two between which the difference in cost of production is more than thirty cents (in costs ranging from $26.091 to $28.118). The twenty-three are well distributed. This internal evidence certainly contributes to strengthen our confidence in the representative character of all.

But there is a variation in the cost of production, comparing one mill with others. The variation is relatively greater if we consider the cost of material ($21.455 — $13.553 = $7.902) or cost of labor ($8.299 — $4.397 = $3.902) used in production. Moreover it is in some cases difficult and in others impossible to see any connection between variations in total cost of production, cost of material and cost of labor. What causes all this irregularity? Difference in locality might explain it in part. The Report calls attention (p. 109) to the tables "relating to the kind and cost of materials . . . for they furnish the explanations for differences in the cost of materials per ton of product, and also and especially for differences between labor costs in the same locality." It takes more labor to work up some material than to work up other. Considerable variety of

choice seems still economically possible in the combination of materials and amount of labor for the production of muck bar iron. The Report after analyzing the cost of production of pig iron (pp. 87–88) comments: "The most apparent thing in the preceding tables is the complete lack of agreement between the facts for the different establishments. Yet it must be borne in mind that the figures . . . are worked out from the actual accounts of the concerns for a definite period. . . If we turn to the general tables . . . where hundreds of establishments are treated, nothing is more marked than the fact that there is not, as yet, a scientific determination of the necessary expenditure in labor, in administration, or in the different classes of supplies in the production of these materials. In spite of the natural differences in cost [upon which the several tables and notes give ample data] arising from the variable qualities of the materials, the inference seems conclusive that from a commercial point of view the production of iron is still carried on, to some extent at least, in a crude, experimental and unequal way." So variation in the cost of production is influenced by other things besides variation in locality.

Part III relates to cost of living. Budgets have been obtained from 3,260 families distributed through ten states (Alabama, Georgia, Illinois, Indiana, New York, Ohio, Pennsylvania, Tennessee, Virginia and West Virginia) and four foreign countries (Belgium, France, Great Britain and Germany) and engaged in six lines of industry (pig iron, bar iron, steel, bituminous coal, coke and iron ore). In the latter industry 183 budgets are given. They represent five states—New York, Ohio, Pennsylvania, Tennessee and Virginia—which together have less mining employes than the 12,900 that, according to the census, Michigan has alone. Yet this latter state is not represented in the tables; neither is Alabama, which has 3,000 employes and a product in tons equal to that of Pennsylvania and second only to that of Michigan. Is it certain that in the small producing states, Ohio and Tennessee, the conditions are like those in Michi-

gan and Alabama? Even if the conditions are the same the fact of the substitution ought to have been explained.

Though the steel industry is the superior one abroad, to judge by earnings of employes, in the United States the bar iron industry holds that distinction. It would seem that the use of machinery in the manufacture of steel here had reduced the amount of skilled labor necessary below the amount necessary in the manufacture of bar iron (pp. 615, 1361–2). The families connected with the production of bar iron have the largest incomes, then, and those connected with the iron ore industry the smallest; the average being in the former $784.11 per family; in the latter $401.65 per family.

The general tables deal with the budgets as they run. Certain other tables include only normal families, those consisting of husband and wife alone, or of these and one to five children under fifteen years of age. Further, to each member a consuming power is assigned: to the husband, 100 units; to the wife, ninety; to the children from eleven to fourteen, ninety; to the children from seven to ten, seventy-five; to the children from four to six, forty; to children from one to three, fifteen. Then the amount of each item of food, for each family and in the summaries, is given in ratio of 100 units of consumption. Particularly instructive should prove table j, (p. 649) "Summary of quantity and cost of certain articles of food," viz., potatoes, sugar, butter, lard, meat, eggs, flour, coffee and tea; and tables k-q (pp. 651–6) "Summary of quantity of food used in certain selected occupations" arranged by industries. Table r (pp. 656 ff.) shows with almost ideal perfection that a decreasing cost of food *per capita* accompanies increase in the size of the family. The tendency of cost of food *per capita* to decrease under these conditions may be accepted as established. But the rate of decrease is undoubtedly magnified by the mode of presentation. For "it seems to be a fair conclusion from an examination of the table on the contrasted expenditure and income of the normal family, that . . . the amounts paid for clothing and

food increase generally in a very steady manner in proportion to the size of the family;" while "the size of the family has apparently no influence, or, at the highest, a very limited influence, on the amounts paid for rent, fuel, lighting and sundries" (p. 680).

There is opportunity for further study of the facts on some of these points. It is worth while to know, if we can find out, what number of families seek to maintain their wonted standard of comfort by moving into larger tenements at a proportionally greater rent as they increase in numbers; and what proportion of them submit to a lowering of the standard of comfort in this respect by crowding the enlarged family into the space occupied before the additions, or by seeking a larger tenement at no increase of rent, that is, a tenement of poorer quality or location.

Though the average total expense of normal families increases with substantial regularity with the number of persons in it; in few, if any cases, even taking the same families, can we venture to say that the size of the family bears any steady relation to the income (pp. 665, 668).

But average items of expense and average income are valuable only within certain limits, and for certain purposes. There is not a family of them all which does not differ from the normal. How? To what degree? A partial answer is to be found in the examination of the accompanying table.

First let it be stated that the average income of these 277 families was $728.00, and that 183 families had a surplus, one budget just balancing; and that the average expenditure was $658.02. On consulting the table we see that 161 families had an income less than $726.00, and 116 an income greater; and that of 184 who did not run in debt, exactly half had an income below the average. As to expenditures, 163 spent less than $651.00 and 114 more. Of the former, 106 incurred no debt and also 78 of the latter.

It is observable that the column registering the number of families distributed according to size of income has two maxima between $401 and $500 and two more between $701

Of a number of families distributed according to income and expense, and indicating the number having surplus and the number in debt. [This total of 277 families engaged in the bar iron industry in Pennsylvania is distributed through eleven establishments. The Table is based on information gleaned from Table XIX Bar Iron A—G, pp. 818–936 of the Report.]

	INCOME.			EXPENSE.		
	Total No. Families.	No. with Surplus.	No. in Debt.	Total No. Families.	No. with Surplus.	No. in Debt.
$301– 325,	1	0	0	1	0	0
326– 350,	1	0	1	1	0	1
351– 375,	2	2	0	3	3	0
376– 400,	13	2	11	6	5	1
401– 425,	10	2	8	13	10	3
426– 450,	23	11	12	14	9	5
451– 475,	10	4	6	31	16	15
476– 500,	22	13	9	16	6	10
501– 525,	12	8	4	20	9	11
526– 550,	6	4	2	12	10	2
551– 575,	10	9	1	14	10	4
576– 600,	5	4	1	9	7	2
601– 625,	10	6	4	11	11	0
626– 650,	10	7	3	11	8	3
651– 675,	6	5	1	9	6	3
676– 700,	7	5	2	13	11	2
701– 725,	14	10	4	9	7	2
726– 750,	14	10	4	9	3	6
751– 775,	3	2	1	7	7	0
776– 800,	19	14	5	5	2	3
801– 825,	9	4	5	6	3	3
826– 850,	8	5	3	6	3	3
851– 875,	7	7	0	8	5	3
876– 900,	2	2	0	5	4	1
901– 925,	5	4	1	8	5	3
926– 950,	1	1	0	5	5	0
951– 975,	0	0	0	0	0	0
976–1000,	6	6	0	3	2	1
1001–1025,	4	4	0	1	1	0
1026–1050,	5	4	1	1	0	1
1051–1075,	0	0	0	1	1	0
1076–1100,	3	2	1	0	0	0
1101–1125,	2	1	1	1	0	1
1126–1150,	2	2	0	4	3	1
1151–1175,	2	1	1	5	4	1
1176–1200,	2	2	0	2	1	1
1201–1225,	1	1	0	0	0	0
1226–1250,	2	2	0	2	2	0
1251–1275,	2	2	0	0	0	0
1276–1300,	2	2	0	0	0	0
1301–	14	13	1	5	4	1
	277	183	93	277	183	93

and $800. The figures in the third column—number of families living within their income—follow in general the course of those in the second; yet, diverging rather widely at first, they gradually approach and coincide with them.

The fifth column, showing the grouping of families according to expenditures, has one maximum, very marked, between $401 and $500; between $701 and $900, the numbers move within narrow limits, and finally there is a small maximum between $1101 and $1200. If similar tables for other States and for several industries should show like or comparable groups of maxima, the fact would give importance to their actual as well as to their relative location.

From a further study of the table, it would appear that there is a tendency for those earning less than $476 and for those spending from $451 to $525 to live beyond their incomes; while for those earning more than $476 and those spending more than $526 (or less than $426) the tendency is to live within the income. Hence we may attach considerable importance to the figures ranging from $451 to $525 as representing the cost of living typical of quite a group of families in this industry. The greater part of them having a small income, (of columns 1 and 4) run in debt rather than live on less by practicing greater economy; the smaller number, having a larger income, save out of it. Yet all the way up, even from an expense account of $351, there are families living within their incomes. These small incomes are not below the minimum amount on which a family can live, and will consent to live for the sake of making both ends meet or of saving something. While some families, as the table shows, will spend all or more than they earn, be it little or much, and while others will undertake very little sacrifice for the sake of saving; a few will save in any normal circumstances except the most straitened. In their simple book keeping, saving is as certain to be a credit item as clothing is, or at least, literature. The rates of income in this table are not below the minimum on which some families will live and save.

But of those who, on a small income, just keep out of debt, how many are there who are obliged to do so because they cannot get credit? There is nothing in the report to answer this question satisfactorily.

Again consider the increase in expense, which bears a discernible but irregular ratio to the increase in income. That it was not absolutely necessary to keep up the physical strength of the members of the family is clear, since so many families live and even save on smaller incomes. The increased expense was not made necessary by increased size in the family. The total expense per family for some 928 normal families in the United States, grouped by size of families, ranges from $443.59 for a family of two persons to $572 for a family of seven, a range of $129. But the increase of income under consideration ranges from $400 and $500 to $800, $900 and upwards. Moreover, as they stand side by side in the tables, the larger family spends much or little; but the small one often more. In fact an increased standard of living alone can account for the greater part of the increase in expenditure. As income increases, the standard of living is raised to correspond. The several items of expense, food, clothing, rent, etc., increase; but rarely does the item of savings.

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ENGLISH SOCIAL MOVEMENTS. By ROBERT ARCHEY WOODS, Lecturer at Andover Seminary and Head of the Andover House in Boston. New York: Scribner's Sons, 1891.

This little work on English social movements is full of suggestion to all who are interested in building up the people. Its method is descriptive and comprehensive, showing with much clearness what a great nation is doing with regard to the labor movement, socialism, university settlements and university extension, church work among the degraded, and general charitable and educational work.

Its easy style is due in part to the fact that a large portion